

Northumbria Research Link

Citation: Bohemia, Erik, Farrell, Helen, Power, Clare and Salter, Celeste (2007) Embedding literacy skills in design curriculum. In: Connected 2007: International Conference on Design Education, 9-12 July 2007, Sydney, Australia.

URL:

This version was downloaded from Northumbria Research Link:
<http://nrl.northumbria.ac.uk/id/eprint/25/>

Northumbria University has developed Northumbria Research Link (NRL) to enable users to access the University's research output. Copyright © and moral rights for items on NRL are retained by the individual author(s) and/or other copyright owners. Single copies of full items can be reproduced, displayed or performed, and given to third parties in any format or medium for personal research or study, educational, or not-for-profit purposes without prior permission or charge, provided the authors, title and full bibliographic details are given, as well as a hyperlink and/or URL to the original metadata page. The content must not be changed in any way. Full items must not be sold commercially in any format or medium without formal permission of the copyright holder. The full policy is available online: <http://nrl.northumbria.ac.uk/policies.html>

This document may differ from the final, published version of the research and has been made available online in accordance with publisher policies. To read and/or cite from the published version of the research, please visit the publisher's website (a subscription may be required.)



**Northumbria
University**
NEWCASTLE



UniversityLibrary

Embedding Literacy Skills in Design Curriculum

Erik Bohemia¹, Helen Farrell², Clare Power² and Celeste Salter³

¹Northumbria University, School of Design, Newcastle Upon Tyne, NE1 8ST, United Kingdom

²University of Western Sydney, Locked Bag 1797, Penrith South DC, NSW 1797, Australia

³PO BOX 242, Hazelbrook, NSW 2779, Australia

ABSTRACT

This paper discusses a collaborative curriculum development process undertaken by a cross-disciplinary team comprising of academic staff from Industrial Design Engineering and the Learning Skills Unit (LSU). The collaboration has led firstly to the development and implementation of an innovative Academic Literacy Skills Resource Book. Secondly, Academic Literacy Skills were incorporated into the Design and Engineering curriculum offered by the School of Engineering at one Australian university. The collaboration started in 2003 and continues into 2007.

The Industrial Design academics mapped and prioritised the graduate attributes and skills that students need across their university career and identified the most appropriate subjects in which to locate these skills. They identified the need to develop a comprehensive academic skills experience for their students as well as the academic skills required for successful completion of each subject and the major final year project.

Perhaps one of the more significant aspects of this collaboration with the LSU was the embedding of academic skills within the discipline rather than being taught as generic skills the students then need to transfer to specific subjects. In 2004, the academics from the LSU and Industrial Design jointly piloted the program with a first year core subject delivered within the Industrial Design and Design & Technology courses.

In 2005 and 2006, the relationship between LSU and Engineering and Industrial Design academics was further developed. This collaboration led to the development of a first year core subject Engineering and Industrial Design Practice (EIDP) with a comprehensive academic skills resource book, integrated guest lectures and the training and monitoring of peer mentors for the compulsory peer mentoring component of the subject as key aspects of a subject focussed around a team project.

INTRODUCTION

Beginning University is often a demanding time academically and socially and is therefore potentially a very stressful time for commencing students (Elliott, 2003; Kantanis, 2003; McInnis, 2001; McInnis, James, & Hartley, 2000; Slee, 2003). It is generally acknowledged that the role of positive social interaction in supporting learning is also important for students (Krause, 2001; McInnis, 2001; Tinto, 2004) especially during times of transition. Academic and social support are particularly important for School of

Engineering students since 10.5% are from non English speaking backgrounds (Butcher, 2007). Yet since students are also faced with multiple commitments outside university (Smith, Ling, & Hill, 2006) which can lead to their disengagement from learning, it was seen as essential to provide students in the School of Engineering and Industrial Design with embedded academic and social support during their first Semester at university. Teaching staff were also faced with institutional needs: to retain students and improve academic literacy standards in an environment which was 'fiscally challenged'.

METHODOLOGY

This project has evolved at the University of Western Sydney (UWS) over a four year period. Description of this evolution is presented below:

2003 – An innovative program began whereby academics met on a regular basis to discuss possible approaches to strengthen the academic literacy skills of the whole cohort of Industrial Design (ID) students. During these meetings, it became clear that some literacy skills were expected of students but were not actually taught, while other skills were taught and re-taught over successive semesters. It was then decided by the teaching staff to 'map' the literacy skills needed to successfully complete the fourth year project, and then to work back through the preceding three years of the course allocating particular literacy skills to particular semesters. Across all years a holistic approach was taken to ensure that the four areas of listening, oral communication, critical reading skills and various genres of writing occurred in each semester of every year. Literacy skills for first year included: identifying main ideas in texts; the ability to paraphrase a text correctly and write well constructed paragraphs, essays and reports; as well as basic IT skills (Power, Bohemia, Farrell, & Yevenes, 2005). Additionally, a critical literacy focus was adopted across all four years. A peer mentoring program was initiated to assist the transition of students into university life.

2004 – LSU staff worked collaboratively with Industrial Design staff to develop assessment tasks for a core Industrial Design subject. These tasks were designed in the context of the outcomes of the mapping process. A resource booklet tailored to the requirement of the written and oral assessment tasks was then developed. This booklet provided an introduction to skills with an emphasis on critical/reflective thinking. It included a range of topics such as: Effective Reading, Note Taking, Writing Annotated Bibliographies, Writing and Presenting Seminar papers in addition to sample

academic texts which were annotated to highlight the required features of this genre of academic writing. The first assignment was a series of annotated bibliographies related to a student selected research category. LSU sessions were held with subject tutors to brief them on utilising the resource booklet in tutorials as well as discussing how to incorporate academic literacy in their teaching. The tutors reported gaining new and useful understanding during these sessions. During the first weeks of semester1, LSU staff conducted a 2 hour tutorial session with each tutorial group explaining and modelling the academic requirements of the annotated bibliography. Peer mentoring was a compulsory aspect of the unit where the Resource Book was used as support in the first year unit.

2005 – The embedding and integration of literacy skills and curriculum development was further developed in a first year School wide Engineering and Industrial Design (EIDP) unit. The 2005 version of the Resource Book focused on academic literacy skills within a core subject that serviced both Industrial Design and Engineering students. The subject had undergone major revision which included a pronounced emphasis on communication skills. In addition to highlighting the requirements of each assignment the book provided worked examples with commentary on the first assignment, and an annotated bibliography model. Supporting references were provided to students online using WebCT. One weekly session in tutorials specifically focussed on students working through the concepts required to write an annotated bibliography, with opportunities for discussion and reflection. In contrast to the previous year, this was run by subject tutors rather than LSU staff. The Resource Book also provided realistic practice exercises, related to the skills discussed in each module, that students could then use as a guide to inform their academic writing practices. The modules covering a range of study skills were retained. Many of the academic skills included in the Resource Book were discussed in lectures, and practiced in lab and tutorial sessions in order to reinforce the integrated nature of the unit. The lab sessions revised/introduced students to WebCT, Excel and Word as well as specialised IT programs. Tutorials focussed on mind mapping, journal writing, referencing and information literacy skills, exploring effective group work strategies, oral presentations and critical thinking and writing exercises. The first section of the Resource Book was available on WebCT to ensure students had access to the materials early in the session while they were adjusting to the needs of their study and obtaining course materials. Again Peer mentoring was a compulsory aspect of the unit and was successfully integrated into the timetable for all students.

2006 – Due to the positive outcomes of the 2005 experience, 2006 was a year of refinement rather than implementing any further major changes. In 2006 the resource Book required revision and updating rather than rewriting as had occurred the previous year. Student and tutor feedback contributed to the changes that were made. The most significant changes the Resource Book were examples of students' work from the previous year. These were annotated with comments relating to both structural and

content features and failed assignments and successful assignments were modelled. The subject lecturer provided content comments and LSU staff pointed out structural elements. These were then used as learning tools in tutorials. In general, the subject followed the same format as 2005 with integrated academic literacy occurring in tutorial sessions, which were linked to students' assessment tasks. Peer mentoring continued to run in the subject as timetabled sessions that were placed strategically across the semester.

2007 – A new inclusion in the first year unit EIDP is that group work is to revolve around an Engineering Without Borders (EWB) project. The EWB 2007 Challenge is a new, national design competition for first year students studying engineering and other related disciplines, where appropriate skills of first year Engineering/Industrial Design/Construction students are developed through a team-based approach. Teams work on a variety of sustainable development projects. This new direction provides a practical application for the learned critical literacy skills and a justification for the development of 'real-world' professional skills.

EVALUATION

Evaluation has been a significant part of the evolution of this collaborative work. Each year began with a thorough exploration of student evaluations; LSU and Library staff feedback and tutor/ lecturer experiences to fine-tune the subject. Equal emphasis was given to WebCT and the Resource Book, which provided flexibility for students to study or complete their assignments 'anywhere, anytime'. During the four years that this paper covers, high standards of critical literacy were maintained with scaffolded support and teamwork skills developed with the social support of the teaching team and peer mentoring. These skills are crucial for professional life.

LITERATURE REVIEW

A. Scaffolding academic tasks

It has been suggested that the difficulties students encounter can often be due to differences between what academics expect and how students interpret these expectations (Street, 2004). Many teaching practitioners suggest it is important to make expectations explicit in order to maximise student learning (Krause, 2005; McInnis, 2001). One approach then, is to scaffold students' learning by providing sample texts or other models to highlight for students valued aspects of content or academic writing appropriate for their field of study. A more comprehensive form of scaffolding may be the introduction of a compulsory subject within a course (Lang & Robbie, 2005) or a whole of faculty approach (Percy & Skillen, 2000). Whether scaffolding occurs within a subject or across a whole course, the aim is to elucidate disciplinary practices by describing or illustrating a series of steps in a process to meet academic standards.

B. Teamwork

Teamwork has value in its own right, but it is also an opportunity to participate in cooperative learning. The terms 'group/team work' or 'group/team learning' may be seen as

generic terms to describe both collaborative and cooperative learning and have many features in common with the community of practice paradigm (Lave & Wenger, 1991) which seems to have its beginnings in social constructivism theory. While collaborative and cooperative learning have many features in common, Jacobs, Power and Loh (2002) highlight certain interpersonal features which they suggest differentiates 'cooperative learning' from 'collaborative learning'. Collaborative learning incorporates such social skills as helping group members with the common task, asking for help, compromising, turn taking and interrupting appropriately; cooperative learning includes these social skills in addition to the ability to consider a 'variety of perspectives'; 'increased motivation to learn' and 'improved interethnic relations' (Jacobs et al., 2002:xi). Cooperative learning requires students to value equal participation in the group through interdependence in a non threatening, trusting, inclusive setting. In a cooperative learning environment, there is as much emphasis on learning and practising social interaction as there is on engaging with the content. The ambit of cooperative learning extends beyond the classroom walls and collaborative learning may be seen as a component of cooperative learning (Jacobs et al., 2002; Wiersema, 2000).

It is generally held that increased feelings of belonging in the university community impact positively on retention rates (Jardine, 2005). At a time of uncertainty such as commencing university, encouraging friendship and the social and emotional support which is a vital part of friendship, maximises opportunities for developing good coping mechanisms (Seifert & Hoffnung, 2000). At this vulnerable time, peers can in formal and informal situations, contribute important information about an individual's 'self concept' (Seifert & Hoffnung, 2000:511) and thereby promote self-confidence. Negative emotions can have a deleterious impact on student learning, however it is often in peer mentoring sessions that mentors 'who have experienced the ups and downs of student life, can empathise with students issues' (Stewart & Rawrhiti, 2005:41) and together the mentees may devise helpful strategies to resolve issues.

DISCUSSION

The project has provided significant pedagogical benefits for both students and staff. Perhaps one of the more significant aspects of this collaboration is the locating of academic skills within the discipline rather than the teaching of generic skills. This embedded support has enabled a more developmental approach to skills acquisition with less overlapping and unnecessary repetition of teaching basic academic skills. This approach is supported by the extensive research of Krause, Hartley, James and McInnes (2005) of the first year university experience of Australian students which demonstrates that students are often confused by the lack of explicit explanation of both the purpose and the requirements of assessment tasks. There is also evidence of improvement of the oral and written competencies of these 'becoming' professionals. The growing collegiality among academics has meant an increased effectiveness and efficiency in teaching of critical literacy skills and thus has

produced an integrated subject as well as a foundation for future collaborative activities.

A. *Scaffolding academic tasks*

EIDP was seen as 'value adding' to the student experience since it allowed for a carefully planned incremental assignment load which eased students into the academic demands of university life. Assignments 1 and 2, an annotated bibliography and a scenario based project (each awarded 15% of the mark allocation) equipped students to write their later assignments. These later assignments required substantial critiquing and attracted 50% of the marks allocated. The assignments were spaced fortnightly from week 6 through to week 14 encouraging students to work steadily as they adapted to university life and its demands. For many of the students this approach was mirrored in other subjects reinforcing the time management skills required.

B. *Team learning activities and team facilitation*

Teamwork provides opportunities for the construction, sharing and distribution of knowledge 'during the course of social interaction' (Mowatt & Siann, 1997:97). It is common practice in the field of Engineering and Industrial Design that individuals will work as members of teams, and this was a driver for focussing on teamwork in EIDP. The rationale for teamwork in the Resource Book is stated as 'a key characteristic of being a professional engineer or industrial designer. Project teams are a way of life in the workforce... and the ability to participate effectively in a team is seen as a core attribute of employees' (Mowatt & Siann, 1997:55). The resource book also explains that 'group work [optimally] increases depth of understanding of materials by interacting with others' viewpoints, enhances critical analysis skills, allows for more material to be covered [and] allows students to see the variety of methods other students use to problem solve' (p. 55). By providing students with some ground rules, shared understandings and expectations for effective teamwork, team members were then able to negotiate with their team if they perceived that the team was not functioning well. Throughout the semester, students also had easy access to the teaching team if necessary to discuss team issues.

The role of teamwork is valued as a powerful learning tool and students were asked to critically appraise the strengths and weaknesses of their team as part of their final assessment task which comprised a team project and team presentation. Students met in their own time in their teams to organise these tasks. A significant component of the team's presentation and assessment criteria was to reflect on the processes the team engaged in which were helpful to meeting the goals of the team. For instance, students provided feedback on how they overcame meeting difficulties and solutions included using MSN Messenger, WebCT discussion tool and mobile phones. Many students also reported that as a result of their experiences, they realised that it is better to meet face to face until they know each other and have some shared understandings of the direction to be taken in their team work. The aim was to develop a mature approach to teamwork which acknowledged strengths and faced the difficulties encountered in each group in a mature and professional way.

C. Peer mentoring

Teamwork is reinforced through the Peer Mentor component of the subject which is an integral and compulsory part of EIDP. The decision to embed peer mentoring was based on research compared results over several years of those who attended Peer Mentoring with the results of non-participants. Across all disciplines participants performed significantly better than non-participants (Carmichael, 2001). For example, in 2003 the mentored group within Engineering and Industrial Design comprised 263 students of whom 84% were awarded a pass or higher result, while in the unmentored group (98 students) only 50% of students were awarded a pass or higher result (Carmichael, Handa, & Power, 2005).

The programmed sessions within this subject are structured whereby the mentor firstly checks whether the mentees have any issues/ concerns. Discussion of these issues to the satisfaction of the group takes precedence over any other topics which may have been planned for the session. The second stage of the session involves considering the timetabled topic as per the subject outline (including time management, university scenarios, unpacking the subject outline) and then moving on to any pre planned requests that the mentees may have decided on at the conclusion of the previous meeting (for instance, the group may have decided to deconstruct a particularly difficult reading or playing football together).

Students who have participated in mentoring at UWS report the development of better study skills; independent management of difficult subjects; feeling socially connected to the university and feeling emotionally supported (Armstrong, 2004; Carmichael, 2003). It has been demonstrated that students who have participated in the peer mentoring program in the School of Engineering and Industrial Design have gained better grades and were much less likely to withdraw before completion of their degree (Carmichael, 2001; Shrestha, 1999).

COLLEGIAL RELATIONSHIPS

The importance of the 'relationship building' in this subject among the teaching staff and among students cannot be understated. The paramount outcome was the satisfaction of teaching an integrated well planned subject. The success of the project was partially the result of long term working relationships, based on trust, and which demonstrated mutual respect for each other's professional input. The strong collegial relationships were able to survive the disappointing non renewal of contract of the subject coordinator and the last minute appointment of a replacement subject coordinator due to fiscal and political challenges. 2007 is the first year that a coordinator has continued for a second uninterrupted term in the role. During the evolution of this subject which is a valuable student experience, the team have been supported and encouraged by heads of program especially in Industrial Design who valued the contribution of the cross functional team in the improvement of student performance.

REFERENCES

- Armstrong, L. (2004). *Developing a Peer Mentoring Training Program for University Students: A Case Study Using Action Research*. University of New England, Australia.
- Butcher, S. (2007). Request for Data. Sydney.
- Carmichael, E. (2001). *Report on the Student Mentoring Program at UWS, 2000*. Sydney: UWS.
- Carmichael, E. (2003). *Evaluation Report of the 2001 University of Western Sydney Student Peer Mentor Program*. Hawkesbury Campus: Office of the Dean of Students, University of Western Sydney.
- Carmichael, E., Handa, N., & Power, C. (2005). *2003 Peer Mentoring Program Report*. Hawkesbury Campus: Student Support Services, University of Western Sydney.
- Elliott, A. (2003, 9-11 July). *Factors affecting first year students' decisions to leave university*. Paper presented at the 7th Pacific Rim- First Year in Higher Education Conference: Enhancing the transition to Higher Education, Queensland Institute of Technology, Brisbane.
- Jacobs, G. M., Power, M. P., & Loh, W. I. (2002). *The teacher's sourcebook for cooperative learning: Practical techniques, basic principles, and frequently asked questions*. Thousand Oaks, CA: Corwin Press.
- Jardine, A. (2005). A discussion paper on retention and strategies that could be employed by UWS Student Support Services to increase retention rates, *Internal discussion paper*. Penrith Campus: Student Support Services, University of Western Sydney.
- Kantanis, T. (2003, 9-11 July). *Same or different: Issues that affect mature age undergraduate students' transition to university*. Paper presented at the 7th Pacific Rim- First Year in Higher Education Conference: Enhancing the transition to Higher Education, Queensland Institute of Technology, Brisbane.
- Krause, K.-L. (2005, 21-22 September). *Engaged, inert or otherwise occupied? Deconstructing the 21st century undergraduate student*. Paper presented at the Keynote presented at the James Cook University Symposium, 2005: Sharing Scholarship in Learning and Teaching - Engaging Students, James Cook University, QLD.
- Krause, K.-L., Hartley, R., James, R., & McInnis, C. (2005). *The First Year Experience in Australian Universities: Findings from a Decade of National Studies* (0 642 77531 1). Melbourne, Vic: Centre for the Study of Higher Education, University of Melbourne.
- Krause, K. (2001). The university essay writing experience: a pathway for academic integration during transition. *Higher Education Research & Development*, 20 (2), 147-167.
- Lang, C., & Robbie, D. (2005, 5-7 September). *A compulsory IT transition subject experience: zero credit points leads to zero future*. Paper presented at the Student Experience Conference: Good practice in Practice,

- Charles Sturt University, Wagga Wagga, NSW, pp. 55-63.
- Lave, J., & Wenger, E. (1991). *Situated learning: legitimate peripheral participation*. New York: Cambridge University Press.
- McInnis, C. (2001). Researching the first year experience: where to from here? *Higher Education Research & Development*, 20 (2), 105-114.
- McInnis, C., James, R., & Hartley, R. (2000). *Trends in the first year experience in Australian Universities*. (0-642-44864-7). Melbourne, Vic: Evaluations and Investigations programme, Higher Education Division. Centre for Study of Higher Educations, Dept of Education, Training and Youth Affairs.
- Mowatt, I., & Siann, G. (1997). Learning in small groups. In P. Sutherland (Ed.), *Adult Learning: a reader* (pp. 95-104). London: Kogan Page.
- Percy, A., & Skillen, J. (2000, November 27-28). *Strategic intervention: A whole of faculty approach*. Paper presented at the National Language And Academic Skills Conference: Sources of Confusion, La Trobe University, S.A., pp. 1-13.
- Power, C., Bohemia, E., Farrell, H., & Yevenes, K. (2005, August 15-18). *Collaborative curriculum design fosters graduates' communication skills*. Paper presented at the International Conference On Engineering Design - ICED 05, Melbourne, Vic.
- Seifert, K. L., & Hoffnung, R. J. (2000). *Child and Adolescent Development* (5th ed.). Boston: Houghton Mifflin Company.
- Shrestha, S. (1999, 4-7 July). *Peer Mentor Program*. Paper presented at the 2nd Asia- Pacific Forum on Engineering and Technology Education, Sydney.
- Slee, J. (2003, 9-11 July). *Transition experiences of students who are the first in their immediate family to enrol in university*. Paper presented at the 7th Pacific Rim-First Year in Higher Education Conference: Enhancing the transition to Higher Education, Queensland Institute of Technology, Brisbane.
- Smith, A., Ling, P., & Hill, D. (2006). The adoption of multiple modes of delivery in Australian universities. *Journal of University Teaching and Learning Practice*, 3 (2), 67-81.
- Stewart, J., & Rawrhiti, L. (2005). Creating Tertiary Retention programmes for indigenous Peoples in NZ- moving towards a holistic approach. *Journal of the Australian and New Zealand Student Services Association* (24), 26-46.
- Street, B. (2004). Academic literacies and the 'new orders': implications for research and practices in student writing in higher education. *Learning and Teaching in the Social Sciences*, 1 (1), 9-32.
- Tinto, V. (2004, 14-16 July). *Promoting the Success of All Students: Lessons Learned from the United States*. Paper presented at the 8th Pacific Rim Conference: First Year in Higher Education 2004 Conference: Dealing With Diversity, Monash University, Melbourne, Vic.
- Wiersema, N. (2000, November 2007). *How does Collaborative Learning actually work in a classroom and how do students react to it? A Brief Reflection*. Available: <http://www.city.londonmet.ac.uk/deliberations/collab.learning/wiersema.html> [2006, November].